

Abstract to be submitted to the American Geophysical Union Fall Meeting in San Francisco

### **Accuracy of ISC Locations in the Middle East and North Africa**

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Seismic characterization at the regional level requires accurate determination of phases and travel times for large combinations of stations and events. An important consideration is the accuracy of event locations; specifically, at what level of station coverage or magnitude can we depend on teleseismic bulletin locations to be accurate to within 10 km or less? To assess this question we are using aftershock studies as "ground truth." Local arrays of seismometers emplaced after large aftershocks have the capability to obtain very accurate hypocenters which can then be compared with those determined teleseismically and reported in bulletins like that of the International Seismological Center (ISC) or the National Earthquake Information Center (NEIC). We compare epicentral locations, origin times, and depth determinations of events from three aftershocks studies (Algeria, Armenia, and Iran) and one local network study (Iran) with ISC locations for the same events. The key parameter for the ISC locations is the number of observations used in the location determination. For more than 40 observations, corresponding to an ISC Mb of about 4.5, ISC locations differ by less than 10 km or so from local network locations. With fewer than about 40 observations (ISC Mb = 4.5), the agreement rapidly diminishes and ISC locations can differ by as much as 80 km or more. Events in Iran show a distinct bias of ISC location errors toward the northeast; events in Armenia and Algeria show no definite directional bias. This study shows that only events with ISC Mb > 4.5 should be used for compiling travel time information from teleseismic bulletins in the Middle East/North Africa region.

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